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IN MEMORIAM: ALVAH AUGUSTUS EATON

R. G. Leavitt.

It is already known to many readers of this journal that Alvah A. Eaton died at his home in North Easton, September 29th, after long suffering endured with heroic courage. Mr. Eaton's publications had made his name widely known. With a considerable number of American students of plants, especially students of ferns and fern-allies, he had formed relations of friendly and professional intercourse. He had been very active as a collector in the region of his residence, in which he had brought to light many plants of interest, including some that were new to science. From his excursions to little explored districts of Florida he had brought back valuable collections of orchids, ferns, and woody plants. He possessed a remarkable talent for finding things of interest and importance, however well concealed from ordinary eyes they might be, which, combined with activity, willingness to penetrate dangerous parts, and persistence in the face of difficulty, made him a very useful contributor to the progress of botanical science. Such men as he was can ill be spared.

Beyond the memorial of appreciation due to everyone who has given his life in devotion to the work which has lain before him, those who were during several years his associates in common tasks wish to express their admiration for Mr. Eaton's many excellent qualities as a man. His sincerity was perfect; every call made upon him for effort was accepted with eager responsiveness; his courage to face any difficult situation, danger to life, or bodily anguish, was of the finest quality.

The writer first became acquainted with him some seven years ago through an inquiry after certain aquatic plants in which Mr. Eaton

was expert. An invitation to the writer to visit Seabrook, N. H., followed. Upon the ensuing excursion to the Powow River and two subsequent trips along the Merrimac, Mr. Eaton's remarkable knowledge of habitats became clear. His transference to North Easton seemed not to disturb his accurate feeling for localities in which plants should be found, an instinct born of long and close familiarity with nature, and amounting oftentimes — so to the onlooker it seemed — to clairvoyant power. This apparent prescience and very remarkable vision distinguished Mr. Eaton among collectors of plants. His eye exhausted the details of the field at once, and picked out the smallest objects of search at distances which baffle any but the strongest sight. Walking rapidly along the roadside he would suddenly retrace his steps a little and out of the grass bring forth some small growth altogether beneath the range of the ordinary trained observer. This keenness was in part a gift, as regards optical perfection, partly the result of self-training in concentration and alertness of mind.

For, finally, this is to be said in honor of Mr. Eaton as a man of science, that he achieved what he achieved by his own efforts, unaided, and often against the force of circumstances. With only a high school education — received at Newburyport and accomplished in half the time usually required — he familiarized himself with much in the results of modern science, mastered French, German, and Latin sufficiently for his needs in taxonomy, mastered the local flora thoroughly and the fauna extensively, and above all won a position of authority in the study of two or three groups of particularly difficult plants. Most of this was done while he was supporting himself by work on a farm. Few men would have overcome the influence of poor health, lack of means, and varied discouragements as he did.

He left two unpublished papers of considerable length, one a study in the family *Orchidaceae*, already announced; the other his most important contribution to science, a monograph of North American Isoëtes, the result of many years of study, revised not long before his final illness.

His friends will be glad to know that in the closing weeks of his life, after it had become certain that he could not live, not only did he show a calmness and fearlessness, the fruition of a sincerely good life, but he was able — such was the strength of his nature — to feel in spite of pain much of peaceful enjoyment of his home and of the outdoors world. He said that the view from his tent door out across the mead-

ows to the trees beyond was as beautiful to him as anything on earth could be; and in a letter written shortly before death he said that he had been moved into the front room of his house — "the pleasantest room in the world." During the entire last period, after the surgeon's knife had, vainly, done its work and his bodily strength had gone, the real nature of the man shone out, noble and ennobling.

State Normal School, Trenton, New Jersey.

BOTANICAL WRITINGS OF THE LATE ALVAH AUGUSTUS EATON.

M. A. Day.

[Feeling that a list of Mr. Eaton's botanical writings would be both a respectful tribute to his memory and an aid to students of American botany, Miss Day, librarian of the Gray Herbarium, has at our request kindly prepared the following bibliography to accompany Dr. Leavitt's sketch. It is due to Miss Day to state that the compilation was necessarily hurried, but it is believed that it includes all Mr. Eaton's more important published contributions to botany and most if not all his minor notes. It is possible that some of the latter have appeared in local journals and have escaped mention. As Dr. Leavitt's notice has taken the form of an appreciation of Mr. Eaton's character and work, rather than an account of his life, it seems desirable to record here the following biographical data:— Alvah Augustus Eaton was born November 20, 1865, at Seabrook, New Hampshire. In 1898, he was elected Secretary of the Linnaean Fern Chapter, and in the following year chosen president of the same society. December 5, 1902, he was made a non-resident member of the New England Botanical Club. In September, 1904, he married Constance E. Wilkins. For about six years at the close of his life Mr. Eaton was officially connected with the Ames Botanical Laboratory at North Easton, Massachusetts, where he was engaged chiefly in monographic, bibliographic, determinative, and field work of a taxonomic nature. He is survived by his widow and only child, Fred W. Eaton.—Ed.]

1. Ophioglossum vulgatum. Fern Bull. iv. 60–61, fig. 1896.
2. Lycopodium alopecuroides in Massachusetts. Fern Bull. v. 3–5. 1897.
3. Two odd Ophioglossums. Fern Bull. v. 11. 1897.
4. A new quillwort from Mexico. Fern Bull. v. 25–26. 1897.
5. Get it in your eye. Fern Bull. v. 29. 1897.
6. A new Cheilanthes of the section Adiantopsis. Fern Bull. v. 43–45. 1897.
7. [Note on Osmunda cinnamomea frondosa.] Fern Bull. v. 65. 1897.
8. [Note on preserving Equisetum.] Fern Bull. v. 66. 1897.
9. [Note on Botrychium ternatum with two fertile fronds.] Fern Bull. v. 66. 1897.
10. A new Isoëtes. Fern Bull. vi. 5–7. 1898.
11. Isoëtes minima n. sp. Fern Bull. vi. 30. 1898.
12. Two new species. Bull. Torr. Bot. Club, xxv. 338–341. 1898.
13. The genus Equisetum, with reference to the North American species. Fern Bull. vi. 45–49, 69–71. 1898; vii. 57–59, 85–88. 1899; viii. 75–78. 1900; ix. 3–4, 33–37, 61–63, 81–84. 1901; x. 43–45, 71–74. 1902; xi. 7–12, 40–44, 73–75, 108–114. 1903; xii. 23–25, 39–43. 1904.

In this series of papers numbers 10 to 17 bear the title The genus Equisetum in North America.

14. Notes on a peculiar Botrychium. Linnaean Fern Chapter (Boston Meeting), 25–30. 1899.
15. A new species of Botrychium. Fern Bull. vii. 7–8. 1899.
16. Fern variation. Fern Bull. vii. 12–13. 1899.
17. A new species of Selaginella. Fern Bull. vii. 33–34. 1899.
18. Two new Isoëtes. Fern Bull. viii. 12–14. 1900.
19. [Note on finding Botrychium simplex.] Fern Bull. viii. 19. 1900.
20. Isoëtes Howellii and Isoëtes Nuttalli[i]. Fern Bull. viii. 32–33. 1900.
21. Parietaria debilis in New Hampshire. Rhodora, ii. 158. 1900.
22. A new variety of Isoëtes. Fern Bull. viii. 60–61. 1900.
23. A few additions to the New Hampshire flora. Rhodora, ii. 167–168. 1900.

24. The genus Isoëtes in New England. Fernwort Papers, 1–16. 1900.

25. A new variety of Dryopteris munita. Fern Bull. ix. 7–8. 1901.

26. Our western Woodwardia. Fern Bull. ix. 86–87. 1901.

27. The earliest fern. Fern Bull. ix. 91. 1901.

28. Specific characters in Botrychium tenebrosum. Fern Bull. x. 54–56. 1902.

29. A new form of Nephrodium Thelypteris. Fern Bull. x. 78. 1902.

30. A new Equisetum. Fern Bull. x. 120–122. 1902.

31. An interesting form of Leersia oryzoides. Rhodora, v. 118. 1903.

32. Isoëtes riparia canadensis and Isoëtes Dodgei. Bull. Torr. Bot. Club, xxx. 359–362. 1903.

33. Additional notes on Botrychium tenebrosum. Rhodora, v. 274–276, pl. 48. 1903.

34. Three new varieties of Isoëtes. Rhodora, v. 277–280. 1903.

35. Dodge's fern. Am. Bot. v. 117. 1904. Reprinted in Fern Bull. xii. 57. 1904.

36. Note on Equisetum pratense. Rhodora, vi. 92. 1904.

37. Preliminary list of Pteridophyta collected in Dade County, Florida, during November and December, 1903. Fern Bull. xii. 45–48. 1904.

38. A correction Fern Bull. xii. 70. 1904.

39. The California gold fern. Fern Bull. xii. 77–78. 1904.

40. Is Asplenium lanceum American? Fern Bull. xii. 79–80. 1904.

41. Isoëtes Amesii: a correction. Fern Bull. xii. 89. 1904.

42. Pellaea Ornithopus. Fern Bull. xii. 113–114. 1904.

43. Notes on Isoëtes. Fern Bull. xiii. 51–53. 1905.

44. Botrychium biternatum Underw. Fern Bull. xiii. 87. 1905.

45. Pteridophytes observed during three excursions into southern Florida. Bull. Torr. Bot. Club, xxxiii. 455–486. 1906.

46. Nomenclatorial studies in three orchid genera. Proc. Biol. Soc. Wash. xxi. 63–67. 1908.

47. Nomenclatorial changes in Isoëtes. Rhodora, x. 42. 1908.

48. ISOËTACEAE. In Flora of the Boston District, II. Rhodora, x. 61–62. 1908.

49. OSTRICH FERN, VAR. PUBESCENS. Fern Bull. xvi. 47–48. 1908.

50. A QUESTION OF NOMENCLATURE. Fern Bull. xvi. 77–79. 1908.

51. EQUISETACEAE. In Gray's New Manual of Botany, Seventh Edition, 51–54. 1908.

52. ISOËTACEAE. In Gray's New Manual of Botany, Seventh Edition, 58–62. 1908.

Articles relating to Mr. Eaton's herbarium and work.

[NOTES ON WORK OF MR. EATON.] Fern Bull. v. 33. 1897.

THE HERBARIUM OF MR. A. A. EATON. Rhodora, iii. 221. 1901.

ALVAH AUGUSTUS EATON. By W. N. Clute. Fern Bull. x. 52–53. 1902, with portrait.

MORE TERATOLOGICAL FORMS OF TRILLIUM UNDULATUM.

WALTER DEANE.

I HAVE recently received, through the kindness of Mr. Edwin DeMeritte, some more examples of teratology in our common Painted Trillium (*Trillium undulatum* Willd.) from Holderness, New Hampshire. A specimen of this species, illustrating this curious modification, was collected in August, 1907, by Mr. DeMeritte, in the same locality, and it formed the basis of an article, which I published some months ago (RHODORA, x. 21–24). The locality, as I described before, is on the shore of Squam Lake "in the leaf-mould and scanty soil on a rocky ridge" near the water.

It was in early July that Mr. DeMeritte visited and collected the plant for the second time. On the very same spot as before, and one stem at least evidently from the same rootstock as the plant of 1907, there were five stalks growing in a close cluster, three of them with three whorls of three leaves each, one with two whorls of three leaves

each, and one with four whorls of three leaves. Two of these specimens were collected. It is significant that the plan of three was followed each year. About two meters from this spot was a single stalk with one whorl of four leaves. This specimen was also taken and the three plants were pressed and given to me for study. Perfectly normal types grew in abundance near by. It was intended to revisit the station while the plants were still in flower, but this was impossible. The fruit in my specimens was beginning to develop and the petals were withered. The persistency, however, of the stamens as well as the petals in Trillium has enabled me to make an accurate examination of the floral envelopes.

I will now describe the three specimens. There is one bearing two whorls of three leaves each, the leaves all taper-pointed and those of the lowest whorl broadly ovate with petioles, 2.5 cm. long. The blades are respectively 16 cm., 14 cm., and 14.5 cm. in length. The internode above is 2.5 cm. long. The leaves of the next whorl are broadly ovate with petioles, 1 cm. long. The blades are 11 cm., 13 cm., and 12.5 cm. in length. Above this is the flower with a peduncle, 5.5 cm. long. The sepals are ovate, taper-pointed, sessile, and of extraordinary size, being 4 cm. wide and 9 cm. long. Indeed they resemble typical leaves. There are four petals of normal shape in this specimen, alternating with the sepals, two of the petals being contiguous and doubtless the result of chorisis. These replace the third petal normally present. There are but three stamens, one at the base of each of three of the petals, and all normal. The ovary has two main styles, the division between them extending to the base, one of the styles being cleft half way down, thus making three styles in all. The ovary is one-celled with two parietal placentae, bearing respectively 5 and 3 developing ovules.

This specimen is probably from the same stock as the one of 1907. Closely contiguous to it is the second stalk which has three whorls of three leaves each, all taper-pointed. In the lowest whorl the petioles are 7 cm. long. The blades of two of the leaves have been destroyed, but the third is present and is broadly ovate and 13.5 cm. long. The internode above is 7.5 cm. in length. In the next whorl one leaf is gone, the scar showing its position. The remaining two have petioles 2.5 cm. long and blades 12 cm. in length. The next internode is 4.5 cm. long and the leaves in the third and uppermost whorl are sessile and 10.3 cm., 10 cm., and 11 cm. in length respectively. The peduncle is 1.5 cm. long and there are three large sepals, 5 cm. long,

each with a normal stamen at the base. The three petals, which are also normal, are persistent and withered and have no stamens opposite them. It will be noticed that in this flower it is the outer row of stamens that were developed, whereas in the former flower it was the inner row (those opposite the petals). The ovary has three styles and is one-celled with three parietal placentae, and contains many ovules as yet undeveloped.

The third specimen, which, as I stated above, was growing about two meters from those just described, has a single whorl of four leaves at the top of the stem, broadly ovate and taper-pointed. Three of them have normal petioles 1 cm. long and blades 15 cm., 15 cm., and 14 cm. in length respectively. The fourth leaf has a broadly winged petiole 1 cm. long and blade 15.5 cm. in length. The peduncle is 4.5 cm. long and there are four sepals of normal size 3 cm. long, each with a typical stamen at the base. Three petals only, normal, each with a typical stamen at its base, are present. The ovary has four styles and was plainly four-celled, the partitions separating three of the cells having been broken away by the enlarging ovules, one of the cells being intact. The ovary was filled with forty-six well developing ovules that bade fair to be good seeds. These three specimens with the dissected parts are in my herbarium.

Mr. C. H. Knowlton has kindly sent to me for examination an abnormal *Trillium undulatum*, collected by him in July, 1897, at Farmington, Maine. The plant is just past the flowering stage. A single whorl of four leaves crowns the top of the stem. They are perfectly normal in shape and from 7.5 cm. to 9 cm. in length. The peduncle, two sepals, and three petals are normal, one sepal having evidently been destroyed by an insect. There are six stamens, five of them typical and one more or less petaloid and occupying the place opposite the missing sepal. The ovary has three styles and is one-celled with three parietal placentae, the cell well filled with ovules.

Teratological forms of Trillium seem to be unusually vigorous, and two at least of the specimens that I have just described would evidently have set well developed fruit. I draw no deductions from these statements, but think it best to put on record facts for future specialists.

Cambridge, Massachusetts.

A Bulletin on Shade Trees, a publication in which the Massachusetts Forestry Association and the Agricultural Experiment Station have co-operated, has been recently issued and will meet a long felt want. Every one loves trees and much time and money are spent in planting and caring for them. The results are not infrequently disappointing on account of injudicious selection, wrong methods in setting, or improper or insufficient care. This bulletin gives the substance of the laws pertaining to shade trees and tree wardens, and discusses the duties of the latter. The selection of varieties suited to different localities is considered. Statistics showing the rate of growth of different trees, together with directions for setting, transplanting, and pruning, are given. Methods of preventing or repairing damages to trees receive attention, and such topics as chaining and bolting, treating decayed cavities, filling, etc., are fully discussed. Injuries to trees due to leaky gas mains, contact with electric wires, and other electrical injuries are considered and the best methods of prevention described. The concluding section of the bulletin gives descriptions of the more serious insect enemies and explicit directions for destroying them or preventing their injuries. This bulletin will be sent to members of the Massachusetts Forestry Association, to tree wardens in all parts of the state, and to public librarians. Other persons desiring copies should write to the Massachusetts Agricultural Experiment Station, Amherst, Mass.

New England Botanical Club, Annual Meeting.— At the annual meeting of the New England Botanical Club held at 3 Joy Street, Boston, on the evening of December 4th, 1908, the Phaenogamic Curator reported the gift to the Club by Miss Kate Furbish of Brunswick, Maine, of her extensive herbarium of Maine plants. The forming of this collection has been one of Miss Furbish's chief interests for the past forty years. It is, therefore, especially valuable as the pioneer collection of flowering plants and ferns from many sections of Maine which have not been visited by other botanists. Altogether the floras of more than two hundred towns and villages are represented; and when the material has been worked over it is expected that fully 10,000 specimens will be added to the organized collections of the Club, and that many of the species will be additions to the recorded flora of Maine.

Officers of the Club for the ensuing year were elected as follows: President, Walter Deane; Vice-President, Fred Dayton Lambert; Corresponding Secretary, Edward Lothrop Rand; Recording Secretary and Treasurer, Emile Francis Williams; Phaenogamic Curator, Merritt Lyndon Fernald; Cryptogamic Curator, Hollis Webster; Members of the Council, George Golding Kennedy, Clarence Hinckley Knowlton, Benjamin Lincoln Robinson.

The following gentlemen were elected to membership in the Club: Austin Walter Cheever, Mattapan, Massachusetts; Herbert Spencer Jackson, Cambridge, Massachusetts; and George Elwood Nichols, New Haven, Connecticut.

ERRATA.

Page 12, line 18; for *Ur dinaceae* read *Uridinaceae*.
" 16, " 1; " *articum* read *arcticum*.
" 32, " 17; " **sphaerocarpum** read **sphaerocarpa**.
" 33, " 30; " *orobioides* read *oroboides*.
" 35, " 7; omit second *rigida*.
" 46, " 22; for POTAMAGETON *read* POTAMOGETON.
" 67, " 3; " *S. gratioloides* read *I. gratioloides*.
" 146, " 32; " *cephaloides* read *cephaloidea*.
" 148, last line; for *116* read *115*.
" 151, line 31; for *glycphyllos* read *glycyphyllos*.
" 162, " 27; " than *read* that.
" 172, last line; for *117* read *116*.
Pages 179, 181, and 183, in the page-heading; for Lists of Connecticut *read* Lists of Connecticut Diatoms.
Page 184, line 38; for *mesostyla* read *mesotyla*.

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